

### **REMARKS**

In the Action, claims 9 and 11-14 are rejected. In response, claim 9 is amended to incorporate the subject matter of claim 11, and claim 11 is cancelled. The pending claims in this application are claims 9 and 12-14, with claim 9 being the sole independent claim.

In view of these amendments and the following comments, reconsideration and allowance are requested.

### **The Rejections**

Claims 9 and 12-14 are rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,017,584 to Albert et al. in view of U.S. Patent Publication No. 2002/0131152 to Liang et al. Claim 9 is amended to include the subject matter of claim 11. Thus, this amendment is submitted to obviate this rejection.

The claims are also rejected as being obvious over U.S. Patent Publication No. 2001/0046081 to Hayashi et al. in view of Liang et al. Hayashi et al. is cited for disclosing a display element comprising a microcapsule composition. As noted in the Action, Hayashi et al. does not disclose the weight percent of microcapsules present in the microcapsule composition or the size distribution of the microcapsules. Liang et al. is cited for disclosing the particle size and distribution of microcapsules having an effect on the electrophoretic display device.

The advantages and unexpected properties of the claimed invention are obtained by the combination of the microcapsule content and the ratio of microcapsules present within particle diameter range of  $\pm 40\%$  of maximum-peak particle diameter. The combination of the cited patents does not disclose or suggest the claimed microcapsule composition comprising a plurality of microcapsules having a shell thickness in the range of 0.1 to 5  $\mu\text{m}$

and being present in an amount of 30 to 80% by weight in the microcapsule composition where the microcapsules having a volume average particle diameter of 30 to 150  $\mu\text{m}$  and not less than 80% by volume are within the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter and where the total content of microcapsules in the aqueous medium in the microcapsule composition is not less than 90 wt%. The Action appears to suggest that since one of ordinary skill in the art would be capable of modifying the weight percent of the microcapsules, the invention would have been obvious. Obviousness is not established by one skilled in the art being “capable” of making the modification. Accordingly, the ability to make the modification does not establish prima facie obviousness where the cited patents provide no teaching or suggestion to make the modification. Prima facie obviousness is established only where it would have been obvious to make the modification.

The Action refers generally to paragraph 0007 of Liang et al. The cited passage refers only to the “large particle size and broad size distribution of the microcapsules” which can result in poor resolution and addressability for color applications. Liang et al. does not identify the large particle size or the size distribution of the microcapsules, and thus, provides no teaching or suggestion how to modify the prior display devices to overcome the alleged disadvantages. Furthermore, Liang et al. provides no suggestion of modifying the weight percent of the microcapsules in combination with the size distribution of the microcapsules in the prior display device such as that disclosed in Hayashi et al. Liang et al. further provides no suggestion that Hayashi et al. needs modifying or improving or that modifications would improve the properties.

The claimed invention is directed to a microcapsule composition that provides an increase in reflectance, an improvement in the state of rows of microcapsules in the display device, while reducing the number of damages or defective microcapsules. The advantages

of the invention are provided by the combination of the amount of the microcapsules in the composition, the volume average particle diameter, the amount by volume of the microcapsules being present within the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter, and the total content of the microcapsules in the aqueous medium being not less than 90% by weight.

The Action contends that it would have been obvious to narrow the microcapsule size distribution of Hayashi et al. in order to improve the resolution. As noted above, Liang et al. does not disclose the size distribution of the prior devices, and thus, provides no guidance on how to modify the prior devices. Since Liang et al. does not identify the size distribution of the prior devices, there is no indication that the size distribution of Hayashi et al. is an example of the prior device that Liang et al. refers to. Therefore, Liang et al. provides no teaching or suggestion to modify the particle size distribution of Hayashi et al. since it cannot be determined whether a particle size distribution of Hayashi et al. should be modified according to Liang et al.

The properties of the claimed invention are not simply a selection of optimum values as suggested in the Action. Instead, the combination of the claimed properties are selected so that the combination provides the improved results. Appended hereto is a Declaration by one inventor demonstrating the advantages of the combination of the claimed properties and the effect on the contrast between reflectances, the state of rows of the microcapsules and the number of damaged or defective microcapsules in the display device.

In the Declaration, Examples 1-4 and Comparative Examples 1 and 2 are reproduced from the present specification. As shown in Comparative Examples 1 and 2, the microcapsule content and the ratio of microcapsules present within the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter are outside the claimed range and

result in a lower contrast between reflectances, an unacceptable state of rows of microcapsules in the display device and a greater number of damaged or defective microcapsules in the display device compared to Examples 1-4 according to the claimed invention.

Experiment 1 has a microcapsule content within the claimed range but a ratio of microcapsules present within the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter outside the claimed range. Thus, Experiment 1 does not correspond to the claimed invention. This experiment also results in a lower contrast between reflectances, an unacceptable state of rows of microcapsules and a higher number of damaged or defective microcapsules in the display device compared to Examples 1-4 of the invention.

Experiment 2 has a microcapsule content outside the claimed range and also exhibits a poor contrast between reflectances, an unacceptable state of rows of microcapsules, and an increased number of damaged or defective microcapsules in the display device compared to Examples 1-4 of the present invention. Experiment 3 is reproduced according to paragraphs 0176 to 0178 of Hayashi et al. This experiment shows a microcapsule content and a ratio of microcapsules present having the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter outside the claimed range. This experiment results in a poor contrast between reflectances, an unacceptable state of rows of microcapsules and an increased number of damaged or defective microcapsules compared to Examples 1-4 of the present invention.

The experiments in the Declaration demonstrate the importance of the combination of the microcapsule content and the ratio of microcapsules present within the particle diameter range of  $\pm 40\%$  of the maximum peak particle diameter. The combination of these properties provide the increased contrast between reflectances, an improved state of rows of

microcapsules, and a reduced number of damaged or defective microcapsules. As shown in the Declaration, these advantages are not attained when one of these properties are absent from the microcapsule composition. The art of record either alone or in combination provide no suggestion that the combination of these properties provide the advantages of the present invention.

As noted above, Liang et al. refers generally to a particle size and a size distribution but provides no guidance how to modify the particle size and size distribution. Furthermore, Liang et al. and Hayashi et al. do not disclose the weight percent of the microcapsules in combination with the claimed size distribution. There is no basis in the Action that the claimed properties when viewed in combination are merely an optimization as suggested in the Action. Liang et al. provides no suggestion to modify Hayashi et al. in the manner of the claimed invention. Furthermore, Liang et al. provides no reasonable expectation that the advantages of the claimed invention can be attained by modifying Hayashi et al.

Accordingly, claim 1 is not obvious over the combination of Hayashi et al. and Liang et al. Claims 12-14 are also allowable as depending from allowable claim 9.

In view of these amendments and the above comments, reconsideration and allowance are requested.

Respectfully submitted,



Garrett V. Davis  
Reg. No. 32,023

Roylance, Abrams, Berdo & Goodman, L.L.P.  
1300 19<sup>th</sup> Street, N.W., Suite 600  
Washington, D.C. 20036-1649  
(202) 659-9076

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